**April 23, 2007**

# MONITOR CERTIFICATION PROCEDURES for the CAIR $NO_x$ PROGRAM(S)

**Question:** For units that are subject to the Clean Air Interstate Regulation (CAIR) $NO_x$ Program(s), what continuous monitoring requirements must be met, and what is the monitoring system certification deadline ?

**Answer:** Affected units under the CAIR $NO_x$ Program are required to continuously monitor $NO_x$ mass emissions and unit heat input according to 40 CFR Part 75, Subpart H. The deadline for completing all certification testing of the required continuous monitoring systems is:

- January 1, 2008[1], if the unit is in a CAIR state that has both annual and ozone season emission caps for $NO_x$ ; or
- May 1, 2008[2], if the unit is in a CAIR state that has only an ozone season emission cap for $NO_x$

The monitor certification and/or quality assurance (QA) requirements that must be met by the above deadlines depend principally on two things:

1. The specific monitoring methodology selected; and
2. Whether the source already has, or must obtain, monitoring equipment that meets Part 75 requirements.

The following paragraphs set forth the monitor certification and QA requirements for CAIR $NO_x$ units and CAIR $NO_x$ ozone season units that are currently in the Acid Rain Program and/or the $NO_x$ Budget Program, and for units that are in neither of these two programs**.** If you have any questions about these

[1] The monitoring systems must be certified and emissions data must be reported one year before allowance accounting begins. For a new unit that commences commercial operation on or after July 1, 2007 the compliance deadline may be later. Under 40 CFR §96.170(b)(2), the deadline is the later of: (a) January 1, 2008; or (b) the earlier of 90 unit operating days or 180 calendar days after commencement of commercial operation.

[2] If the State SIP rule requires year-round reporting (even though only the ozone season data are used for compliance), the certification deadline and start of reporting specified in the rule may be January 1, 2008. For a new unit that commences commercial operation on or after July 1, 2007 the compliance deadline may be later. Under 40 CFR §96.370(b)(3), the deadline is the later of: (a) May 1, 2008; or (b) the earlier of 90 unit operating days or 180 calendar days after commencement of commercial operation.

requirements, please address them to the Emissions Monitoring contact for your EPA Region (see http://www.epa.gov/airmarkets/emissions/cem-contact.html).

(**Important Note:** Before any required monitoring plan or certification application submittals are made concerning a CAIR $NO_x$ unit or CAIR $NO_x$ ozone season unit, the owner or operator must have selected a CAIR designated representative for the CAIR $NO_x$ source that includes the CAIR $NO_x$ unit or CAIR $NO_x$ ozone season unit, using the Clean Air Markets Division (CAMD) Business System. Each CAIR $NO_x$ source must have a CAIR designated representative. The owner or operator should contact Laurel DeSantis, at **desantis.laurel@epa.gov**, or at (202) 343-9191 if there are any questions about designating representatives.)

## CAIR $NO_x$ UNITS---CATEGORY 1 (Units in the Acid Rain Program)

### Background

All units subject to the Acid Rain Program (ARP) are required to monitor and report $SO_2$ and $CO_2$ mass emissions, $NO_x$ emission rate (lb/mmBtu), and heat input according to 40 CFR Part 75. Many Acid Rain Program units in the Eastern United States and Midwest have also been required to monitor and report $NO_x$ mass emissions under the $NO_x$ Budget Program (NBP). Acid Rain Program units which are affected units under the CAIR $NO_x$ program(s) must meet the following requirements by **January 1, 2008**:

#### 1. ARP Units in the $NO_x$ Budget Program

For Acid Rain units currently in the NBP, no additional monitor certifications, monitoring plan revisions, or QA tests are required to comply with the CAIR $NO_x$ Program(s). Owners or operators of these units should continue to quality-assure their monitoring systems in accordance with Part 75 and continue to report emission data (including $NO_x$ mass emissions) and heat input on a year-round basis.

#### 2. ARP Units Not in the $NO_x$ Budget Program

Acid Rain units which are not in the NBP must meet the following monitor certification and QA requirements:

- Select and implement a $NO_x$ mass emissions monitoring methodology that meets the requirements of 40 CFR Part 75, Subpart H (see **Table 1**, below);

C Define a suitable $NO_x$ mass emissions formula in EDR record type (RT) 520 of the electronic monitoring plan and perform formula verification;

C Add a new RT 505 to the electronic monitoring plan, with a program code of SUBH, as described in Table 3 of the document entitled "Part 75 Certification Administrative Processes for CAIR $NO_x$ Units and CAIR $NO_x$ Ozone Season Units".

C **Begin reporting hourly, quarterly, and year-to-date $NO_x$ mass emissions data on January 1, 2008.**

Since ARP units are required to monitor $NO_x$ emission rate and heat input under Part 75, **EPA recommends, for simplicity, that $NO_x$ mass emissions be determined as the product of $NO_x$ emission rate and heat input rate** (see Case # 1 under Coal-fired Units and Cases # 1, 2 and 5 under Oil/Gas-fired Units in **Table 1**, below). If this monitoring methodology is selected, **no additional monitoring system certifications are required** for the CAIR $NO_x$ program(s), provided that all of the Part 75 monitoring systems required to monitor and report $NO_x$ emission rate and heat input rate have been previously-certified and are continuing to meet the ongoing QA/QC requirements of Part 75.

However, Subpart H also allows the owner or operator to determine $NO_x$ mass emissions as the product of $NO_x$ concentration times stack gas flow rate (see: Case 2 under Coal-fired Units and Cases 3 and 4 under Oil/Gas-fired Units in **Table 1, below**). If this option is selected, the owner or operator must:

- Define a $NO_x$ concentration (NOXC) monitoring system in the monitoring plan, assigning it a unique system ID number;
- Define the appropriate $NO_x$ mass emissions formula in RT 520 of the electronic monitoring plan and verify the formula;
- Demonstrate that the $NO_x$ concentration monitoring system meets the certification requirements of Part 75, i.e., that the system has passed a 7-day calibration error test, a cycle time test, a linearity check, a relative accuracy test audit (RATA), and a bias test;
- Submit a certification application for the $NO_x$ concentration monitoring system within 45 days after completing all required certification tests;
- Report the results of all required ongoing QA tests of the monitoring system;

- Add a new RT 505 to the electronic monitoring plan, with a program code of SUBH, as described in Table 3 of the document entitled "Part 75 Certification Administrative Processes for CAIR $NO_x$ Units and CAIR $NO_x$ Ozone Season Units"; and

- **Begin reporting hourly, quarterly, and year-to-date $NO_x$ mass emissions data on January 1, 2008.**

**Table 1: $NO_x$ Mass Emissions Monitoring and Heat Input Methodologies for the CAIR $NO_x$ Programs**

| Unit Type | Case | $NO_x$ Mass Emissions Monitoring Methodology | Required Monitoring Systems for CAIR $NO_x$ Programs |
|---|---|---|---|
| Coal-fired<br>or<br>Unit that burns other types of solid fuel(s) | 1 | $NO_x$ Emission Rate x Heat Input Rate | $NO_x$–diluent CEMS for $NO_x$ emission rate<br>and<br>Stack gas flow rate and diluent gas ($O_2$ or $CO_2$) monitors for heat input |
| | 2 | $NO_x$ Concentration x Stack Gas Flow | $NO_x$ concentration CEMS and stack gas flow rate monitor for $NO_x$ mass<br>and<br>Stack gas flow rate and diluent gas ($O_2$ or $CO_2$) monitors for heat input |
| Gas or Oil-fired | 1 | $NO_x$ Emission Rate x Heat Input Rate | $NO_x$–diluent CEMS for $NO_x$ emission rate<br>and<br>Stack gas flow rate and diluent gas ($O_2$ or $CO_2$) monitors for heat input |
| | 2 | $NO_x$ Emission Rate x Heat Input Rate | $NO_x$–diluent CEMS for $NO_x$ emission rate<br>and<br>Appendix D fuel flowmeter system for heat input |

| Unit Type | Case | $NO_x$ Mass Emissions Monitoring Methodology | Required Monitoring Systems for CAIR $NO_x$ Programs |
|---|---|---|---|
| Gas or Oil-fired (cont'd) | 3 | $NO_x$ Concentration x Stack Gas Flow Rate | $NO_x$ concentration CEMS and stack gas flow rate monitor for $NO_x$ mass<br>and<br>Stack gas flow rate and diluent gas ($O_2$ or $CO_2$) monitors for heat input |
| | 4 | $NO_x$ Concentration x Stack Gas Flow Rate | $NO_x$ concentration CEMS and stack gas flow rate monitor for $NO_x$ mass<br>and<br>Appendix D fuel flowmeter system for heat input |
| | 5 | $NO_x$ Emission Rate x Heat Input Rate (peaking units, only) | Appendix E correlation curve for $NO_x$ emission rate<br>and<br>Appendix D fuel flowmeter system for heat input |
| Gas or Oil-Fired Low Mass Emissions (§ 75.19) | 1 | $NO_x$ Emission Rate x Heat Input | Generic default $NO_x$ emission rate from table LM-2<br>and<br>Maximum rated hourly heat input for each operating hour |
| | 2 | $NO_x$ Emission Rate x Heat Input | Generic default $NO_x$ emission rate from table LM-2<br>and<br>Apportioned hourly heat input from long term fuel flow measurements |
| | 3 | $NO_x$ Emission Rate x Heat Input | Fuel and unit-specific $NO_x$ emission rate from emission testing<br>and<br>Maximum rated hourly heat input for each operating hour |

| Unit Type | Case | $NO_x$ Mass Emissions Monitoring Methodology | Required Monitoring Systems for CAIR $NO_x$ Programs |
|---|---|---|---|
| Gas or Oil-Fired Low Mass Emissions (§ 75.19)---cont'd | 4 | $NO_x$ Emission Rate x Heat Input | Fuel and unit-specific $NO_x$ emission rate from emission testing<br>and<br>Apportioned hourly heat input from long term fuel flow measurements |

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# CAIR $NO_x$ UNITS---CATEGORY 2
# (Non-ARP Units in the NBP)

For electricity generating units (EGUs) that are not Acid Rain-affected, but are currently in the $NO_x$ Budget Program, no monitoring plan changes are required and no additional monitoring requirements must be met to comply with the CAIR $NO_x$ Program(s), **unless** the unit is located in a state where the NBP SIP rule does not require unit heat input to be monitored and reported. In that case, the owner or operator must select and implement one of the allowable heat input methodologies in **Table 1**, above, by January 1, 2008 or May 1, 2008 (whichever deadline is applicable)[3].

However, note that a non-Acid Rain NBP unit that currently reports data on an ozone season-only basis and is located in a CAIR state that has an annual $NO_x$ emissions cap, will have to:

- Switch to year-round reporting of $NO_x$ mass emissions and heat input, no later than January 1, 2008; and

- , Follow the year-round QA provisions in Appendix B of Part 75 in lieu of the ozone season-only QA procedures in 75.74(c).

For NBP units transitioning to the CAIR $NO_x$ Program(s), ozone season-only reporting is allowed only in states that have a seasonal $NO_x$ emissions cap, but not an annual cap (there are two such NBP states---Massachusetts and Connecticut), and only if the state rule allows this reporting option.

[3] See the document entitled "Part 75 Certification Administrative Processes for CAIR $NO_x$ Units and CAIR $NO_x$ Ozone Season Units".

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# CAIR $NO_x$ UNITS---CATEGORY 3
# (Units Not in Either ARP or NBP)

## Background

Many CAIR $NO_x$ units and CAIR $NO_x$ ozone season units are not in either the Acid Rain Program or the current $NO_x$ Budget Program. The vast majority, if not all, of these are EGUs that are located in CAIR states that are outside the geographic region of the NBP and are exempted from the ARP under 40 CFR §72.6. This includes:

- Simple-cycle turbines that commenced commercial operation before November 15, 1990;
- Cogeneration facilities that meet certain requirements;
- Qualifying facilities with certain power purchase commitments; and
- Independent power producers that meet certain requirements

By the applicable monitoring certification deadline (January 1, 2008 or May 1, 2008[4]), each of these affected units must have in place Part 75-compliant methodologies for $NO_x$ mass emissions and unit heat input.

Some of these affected units already have installed continuous monitoring equipment, either to meet the requirements of 40 CFR Part 60 (NSPS) or a state regulation, or to satisfy a condition in their operating permit. In some instances, the existing monitors will be able to meet Part 75 performance specifications, while in other cases, new monitors will have to be purchased and installed. However, even if the existing monitors are capable of meeting Part 75 performance specifications, few, if any, of these affected units have a data acquisition and handling system (DAHS) that meets Part 75 requirements.

## Compliance Requirements

The specific compliance requirements for each affected unit must be determined on a case-by-case basis, as follows:

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[4] Only one state outside the NBP geographic region (Arkansas) has a seasonal $NO_x$ cap but not an annual cap. This is the only non-NBP CAIR Program state in which ozone season-only reporting is allowed---and only if the Arkansas state rule permits that reporting option to be used.

- First, a CAIR designated representative must be selected and assigned to each affected unit. The CAIR designated representative must be registered with the CAMD Business System.

- Then, $NO_x$ mass and heat input monitoring methodologies that meet Part 75, Subpart H requirements must be selected and implemented. Acceptable methodologies are listed in **Table 1**, above. If the owner or operator selects the low mass emissions (LME) methodology in § 75.19, see "**Category 4**" below for a discussion of the LME compliance requirements.

- A data acquisition and handling system (DAHS), capable of accurately reading and electronically recording signals from the monitoring systems, performing Part 75 missing data substitution, and generating electronic quarterly reports in the required format, must be installed and operational by the applicable compliance deadline. See Question 14.96 in the *"Part 75 Emissions Monitoring Policy Manual"* (available on the CAMD Website) concerning the Part 75 DAHS verification requirements.

- All required certification tests for the selected $NO_x$ mass and heat input monitoring methodologies must be completed by the applicable monitor certification deadline (i.e., January 1, 2008 or May 1, 2008). If the tests have not been completed by that date, the owner or operator must report conservatively high substitute $NO_x$ mass and heat input data beginning on that date, in accordance with §75.70 (g).

- No less than 45 days[5] before certification testing commences, a complete initial monitoring plan for the affected unit(s) must be submitted, in accordance with §§ 75.53, 75.62 and 75.73 (c). A notice of certification testing must also be provided according to §75.61, $\geq$ 21 days before the testing commences, with one exception—a test notice is not required for fuel flowmeter certifications.

- The Part 75-compliant DAHS must be installed and operational before certification testing commences. EPA recommends the following certification test sequence for CEMS: DAHS verification, calibration gas tests (i.e., linearity check, cycle time and 7-day calibration error tests), and RATA.

[5] On August 22, 2006 EPA proposed to reduce this requirement from 45 to 21 days (see 71 FR 49264). If this rule change is finalized and in effect at the time the projected certification test date is established, then the initial monitoring plan may be submitted $\geq$ 21 days before testing, rather than $\geq$ 45 days before testing.

- Each monitoring system will be considered to be provisionally certified as of the date and hour of successful completion of all required certification tests, including the DAHS verification. A complete certification application is required within 45 days of completing all certification tests, in accordance with § 75.63.

  The owner or operator of a source that uses CEMS shall use the provisional certification date as the reference point from which to quality assure the CEMS data, either according to Part 75, Appendix B, sections 2.1, 2.2 , and 2.3 (for year-round reporters) or according to §75.74(c) (for ozone season-only reporters). All of the required quality assurance tests shall be done at the frequency, load levels, etc. specified in Appendix B or in §75.74(c) (as applicable)[6].

- The owner or operator must begin reporting $NO_x$ mass emissions and heat input data on either: January 1, 2008 (for year-round reporters); or May 1, 2008 (for ozone season-only reporters).

- The owner or operator of an affected unit for which emissions and heat input data are reported on an ozone season-only basis shall use only quality-assured ozone season emissions data for the purposes of calculating the percent monitor data availability (PMA) and determining appropriate substitute data values during missing data periods (see § 75.74 (c)(7)).

[6] On August 22, 2006, EPA proposed substantive changes to the QA requirements for ozone season-only reporters (see 71 FR 49265, August 22, 2006). These proposed rule revisions will apply if they are adopted in a final rule, which is expected in the summer of 2007.

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# CAIR $NO_x$ UNITS---CATEGORY 4
# (Low Mass Emissions Units)

Section 75.19 of Part 75 provides an alternative to continuous emission monitoring for qualifying low mass emissions (LME) units. To qualify for LME status, a CAIR $NO_x$ unit or CAIR $NO_x$ ozone season unit must burn only fuel oil and/or gaseous fuel and its emissions must be:

- $< 100$ tons of $NO_x$ per year and $\leq 50$ tons of $NO_x$ in the ozone season, if the unit is subject to both annual and seasonal $NO_x$ emission caps under CAIR; or
- $< 100$ tons of $NO_x$ per year and $\leq 50$ tons of $NO_x$ in the ozone season, if the unit is subject only to a seasonal $NO_x$ cap under CAIR and reports emissions data year-round; or
- $\leq 50$ tons of $NO_x$ in the ozone season, if the unit is subject only to a seasonal $NO_x$ cap under CAIR and reports emissions data on an ozone season-only basis; and
- $\leq 25$ tons of $SO_2$ per year, if the unit is also subject to the Acid Rain Program and/or to the CAIR $SO_2$ program

If the unit is in the Acid Rain Program, an estimate of the annual $CO_2$ mass emissions is also required. Note that if the LME methodology is selected for $NO_x$, it must be used for all other parameters that are required to be monitored under Part 75 (i.e., $SO_2$ and/or $CO_2$ and/or heat input, as applicable) . You may not "mix and match" LME with other Part 75 monitoring methodologies.

The LME methodology allows the owner or operator to use conservative default $NO_x$ emission rates and heat input values to estimate $NO_x$ mass emissions, in lieu of using continuous monitors. The default $NO_x$ emission rates may either be generic values obtained from Table LM-2 in § 75.19 or may be determined by fuel-and-unit-specific testing using the procedures in Appendix E of Part 75, with minor modifications. To quantify unit heat input, the owner or operator may either report the maximum rated hourly heat input for each operating hour or may use long-term fuel flow. The long-term fuel flow method consists of apportioning the total quarterly heat input to each unit operating hour, based on the hourly unit load. The total quarterly heat input is obtained from fuel billing records or by direct measurement using fuel flowmeters or oil tank drop procedures.

The Part 75 regulation requires the owner or operator to submit a certification application for each LME unit, $\geq 45$ days prior to the date on which the methodology begins to be used. Though classified as a certification "application", it is more precisely a "declaration" that the unit qualifies for LME

status. The application must contain a complete electronic monitoring plan and sufficient evidence that the unit qualifies to use the methodology.

The LME methodology is unique in that it does not require a Part 75-compliant DAHS. The required electronic reports can be generated using EPA's "Monitoring Data Checking" (MDC) software, which is available on the CAMD web site. MDC has a special module capable of generating electronic quarterly reports for LME units. In 2008, MDC will be integrated into the "Emissions Collection and Monitoring Plan System" (ECMPS), as part of EPA's efforts to re-engineer its data systems. The LME module will continue to exist and function within ECMPS. A free tutorial explaining how to use the LME module is available on CD-ROM from Perrin Quarles Associates, upon request. Contact Nat Rogers at (434) 979-3700 if you wish to obtain a copy.

## Additional Information

For additional information about the Part 75 monitoring and reporting requirements, see the "Plain English Guide to the Part 75 Rule", available on the CAMD web site.